Rhodora

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INTERESTING FUNGI FROM MASSACHUSETTS [1]

HOWARD E. BIGELOW

During the summer and fall of 1958, climatic conditions were especially favorable for the growth of fleshy fungi in western Massachusetts and a number of rare or unusual species appeared. Among these were several agarics about which there is little information in the literature since the original descriptions. *Amanita cinereoconia, Clitocybe fellea, C. socialis, Hygrophorus basidiosus* and *H. flavodiscus,* are described here in order to complete the data omitted by the authors. Two gasteromycetes, *Pisolithus tinctorum* and *Pseudocolus schellenbergiae,* are of interest because of their occurrence in this region.

The colors cited in quotation marks are from Ridgway (1912).

HYMENOMYCETES

Amanita cinereoconia Atkinson, Ann. Mycol. 7: 366. 1909. Plate 1249

Pileus 2.5–7 (–11) cm. broad, convex to broadly convex at first, soon expanding to plane, at times with a broad obtuse umbo, margin appendiculate with whitish, cottony fibrils from a partial veil, becoming appressed, surface dry, with numerous pyramidal warts (up to 2 mm. high) ± in concentric rings, texture soft and rather cottony, points finally eroded and leaving only irregular floccose patches, appressed near margin, color "fuscous," "hair brown," "smoke gray" on warts and patches, whitish to "pale smoke gray" between warts and patches; flesh thick on the disc, tinted pale fuscous near the pileus surface, whitish below, odor and taste not distinctive.

[1] Acknowledgment is made to the Faculty Research Council, University of Massachusetts, for financial support of my 1958 field program, and for bearing the cost of photographic plates in this paper.

Lamellae free but closely appressed to stipe, broad (up to 7 mm.), rounded at cap margin, narrowed at stipe, close, white, edges straight, fimbriate under a lens.

Stipe 3.5–17 cm. long, apex and medial portions 0.6–2.5 cm. in diameter, base napiform, bulbous portion 1–3 cm. broad, becoming ± equal in age, radicate portion 3–6 cm. long, central, solid (interior whitish), pale "fuscous" to "fuscous" at bulb, gradually paler to the whitish apex, apex and medial portions fibrillose to somewhat scabrous; volval remains evident as "fuscous" warts in three to five ± concentric rings on the bulb surface, finally appressed; annulus apical, thick, soft and cottony, white, usually adhering to stipe apex and cap margin, becoming appressed.

Spores 8.5–10 × 4.5–6.5 μ, usually elliptical (polymorphic at times and then oblong, pyriform, obovate, lacrymoid, 6.5–12 × 5–6.5μ), smooth, amyloid; basidia 27.5–42(–60) × (6.5–)9–11 (–12) μ, four-spored; cystidia not distinct from the numerous basidioles; pileus tissue: surface with numerous globose cells, 19–60 μ in diameter, contents brownish in KOH, wall smooth, slightly thickened, originating as cystidioid end cells, clavate at first, but finally inflated to globose and becoming free, cuticular hyphae cylindrical, 2–4.5 μ in diameter, hyaline in KOH, interwoven, appearing slightly gelatinous in KOH, tramal hyphae cylindrical to inflated, 5–17 μ in diameter, clamp connections present; gill trama divergent, hyphae cylindrical to inflated, 6–20 μ in diameter.

Solitary or gregarious, on soil in mixed woods or under conifers. Leverett, Amherst. August and September. *Bigelow 7360, 7543, 7650, 7756.*

This distinctive *Amanita* is well-known in more southerly regions. It was originally described from Chapel Hill, North Carolina. More recently, Hesler (1937) has collected the species in Great Smoky Mountains National Park.

In the field, the distinctive features of expanded specimens are: the gray warts and patches on the pileus and bulb of the stipe, the lack of membranous annulus or volva, the napiform and radicating stipe.

Dr. A. H. Smith of the University of Michigan has kindly confirmed the identity of my material.

Clitocybe fellea Peck, Ann. Rep't N. Y. State Mus. 51: 284. 1898.

Pileus 6–21 mm. broad, hemispherical at first, becoming convex, finally subplane and somewhat depressed, dry and somewhat shining, radiate-fibrillose to matted-fibrillose under a lens, finally minutely diffracted-scaly, a yellowish-tan to putty color (dingy "cream buff" to "chamois"); flesh thin, whitish, odor farinaceous, taste bitter but soon fading.

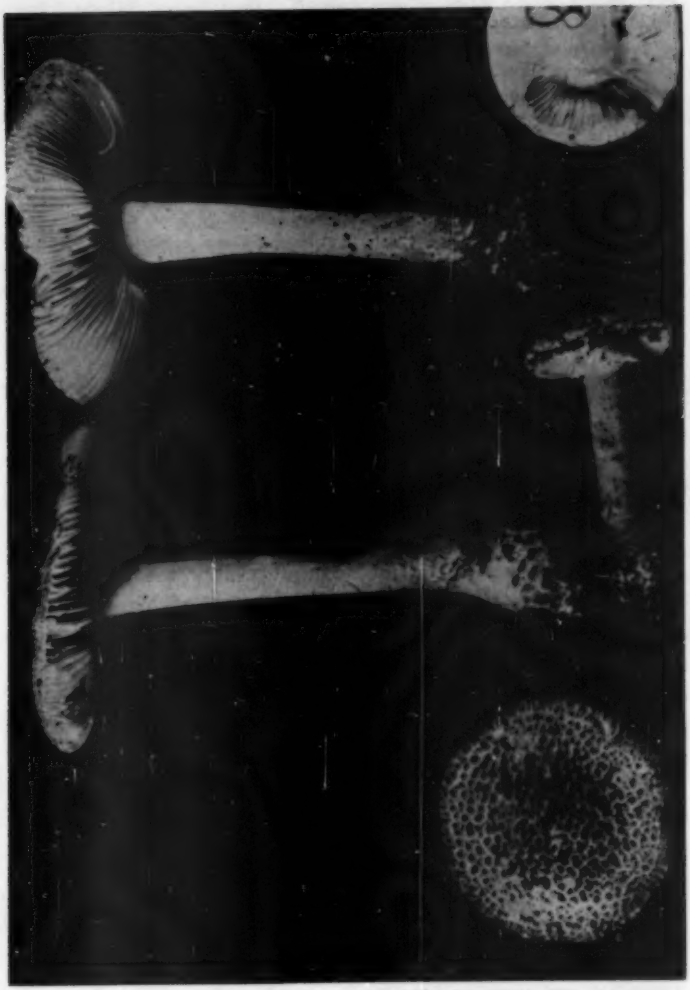

PLATE 1248. *Amanita cinereoconia*, × ⅔

Lamellae broadly adnate for some time, finally short decurrent, close to nearly subdistant, broad (3–5 mm.), not forked or intervenose, whitish, edges even and straight.

Stipe 1.5–3.5 cm. long, 1–2 mm. thick at apex, equal or the base slightly enlarged, often curved and somewhat flexuous, solid, central, surface fibrillose-striate for some time, finally appressed, concolorous with the pileus.

Spores 6–8 (–9) × 4.5–5.5 μ, broadly elliptical, smooth, hyaline in KOH, not amyloid, white in mass; basidia 25–38.5 × 6.5–8 μ, four-spored; cystidia not differentiated; pileus tissue: cuticle yellowish in KOH, pigment present as very fine encrustations or in slightly thickened but smooth walls, hyphae cylindrical to somewhat inflated, 4.5–8 (–11) μ in diameter, surface often with projecting end cells but not organized into a distinct turf, trama hyaline, hyphae cylindrical to slightly inflated, (2–) 4.5–8 μ in diameter, clamp connections present; gill trama regular to subparallel, hyaline, hyphae cylindrical to slightly inflated, 3–13 μ in diameter.

Solitary, scattered to gregarious. On bare soil, Polytrichum, or in grass. In the open near conifers. Amherst, Sunderland, Leverett. June to September. *Bigelow 6514, 6515, 6605, 6714, 7191, 7488, 7576, 7630, 7731, 7804.*

Peck's (1898a) colored plate of *C. fellea* is an accurate representation. My material is similar in all respects with the illustration and description. Through the courtesy of Mr. Stanley J. Smith, I have also had the opportunity to make an examination of the type collection from Gansevoort, N. Y.

It is unusual that there are so few records of this species. The abundance of it throughout the collecting season of 1958 would certainly seem to indicate that this agaric is not rare. Possibly, the distribution is restricted to the northeast. Smith's (1944) report of *C. fellea* from Oregon is of another species, at present undetermined.

Clitocybe socialis (Fr.) Gillet, Lest Hyménomycètes, p. 159. 1874.

Pileus (0.5–) 1.5–4 cm. broad, convex to broadly convex at first with the margin incurved and slightly inrolled, edge white pubescent, expanding to plane with the margin remaining decurved for some time, in age becoming subrepand to elevated, rarely undulate, disc flat to somewhat umbonate or broadly depressed, surface dry and opaque, moist-appearing in wet weather but not hygrophanous, dull, innately subsilky-pulverulent, finally glabrous, color dark red at first ("dragon's-blood"), fading with age to dull pinkish (dull "coral pink," dull "flesh

pink," sordid "onion pink," "Japan rose"); flesh white, rather thin, odor and taste mild to rather disagreeable or subfarinaceous.

Lamellae short decurrent at first, finally moderately decurrent, close, thin, narrow, not easily separable from the pileus trama, rather brittle, at times forked and anastomosing, not intervenose, color whitish ("cartridge buff") at first, becoming buff ("cream color," "ivory yellow") in age, edges even and straight at first, becoming torn and undulate in age.

Stipe 1.5–4 cm. long, 2.5–5 (–11) mm. broad at the apex, tapering downward from a slightly enlarged apex, bases often connate by a tomentose-mycelioid covering and strigosity which is intergrown with grass and humus, usually slightly curved, solid (white and spongy within), central, surface with a faint bloom at first, becoming glabrous or innately fibrillose-striate, scurfy-lacerate in age, pale buff at base, concolorous with cap at apex.

Spores 4.5–5.5 × 2.5–3 μ, elliptical, smooth, not amyloid, white in mass; basidia 13–26 × 4–6 μ, four-spored; cystidia not differentiated; pileus tissue: surface of young specimens with a few cystidioid end cells, clavate-pedicellate, ± 15 × 7 μ, pigment evident in cell contents, becoming appressed in expanded specimens, cuticular hyphae cylindrical, 2–3 (–5) μ in diameter, tramal hyphae cylindrical to inflated, 3–12 (–18) μ in diameter, clamp connections present, a few scattered laticiferous hyphae present; gill trama regular to subparallel, hyphae cylindrical to inflated, 4–16.5 μ in diameter.

Gregarious to subcespitose on lawn. August and September. Amherst. *Bigelow 7591, 7760, 7722.*

The only other authentic specimens of *C. socialis* known previously in this country are those collected at Ann Arbor, Michigan by A. H. Smith and C. H. Kauffman. While a graduate student at the University of Michigan, I had the opportunity to examine this material. The Amherst collections cited above are identical in all respects except habitat with those from Michigan. Smith's and Kauffman's collections were made under pine or in a mixed stand of black locust and pine.

Hygrophorus basidiosus (Peck) Peck, Bull. N. Y. State Mus. 116: 57. 1907.

Pileus 1.5–4 cm. broad, convex to plane, subumbonate at times, glabrous, hygrophanous, grayish-brown when moist, fading to pale gray (no comparable colors in Ridgway), radiate-streaked in fading; flesh whitish, odor and taste not distinct.

Lamellae adnate to short decurrent, subdistant, broad, arched, thick, pale gray, edges even.

Stipe 3.5–5 cm. long, 4–7 mm. thick at apex, tapering downward to a slender base, solid becoming hollow, surface glabrous, white.

Spores 4–5.5 (–6) × 3–4.5 μ, subglobose, smooth, hyaline in KOH, not amyloid; basidia 31–45 × 5–6.5 μ, four-spored, sterigmata 5–9 μ long, curved; cystidia not differentiated; pileus tissue: surface not gelatinous in KOH, cuticular hyphae cylindrical, 1–3 μ in diameter, tramal hyphae mostly cylindrical, 2–6 μ in diameter, clamp connections present; gill trama interwoven, hyphae cylindrical, 2–4.5 μ in diameter.

Gregarious in sphagnum in bog. Leverett. August. *Bigelow 7503.*

Peck's (1887) orginal description of *Clitocybe basidiosa* states the lamellae are "whitish with a violaceous tint." When fresh, the lamellae of no. 7503 were pale gray without a violaceous tint. Peck further describes *C. basidiosa* as possessing a depressed pileus adding in his notes following that the pileus is "rarely slightly umbonate." The pilei of my collection were plane and subumbonate at times. As dried, my specimens are pale grayish not the very pale buff of Peck's type. In other respects, there is agreement. I found the spores of the type specimens to be slightly larger, 4.5–5.5(–6) × 4.5 μ, than the measurements reported by Smith and Hesler (1942).

Hygrophorus basidiosus is most closely related to *H. albipes* Peck. As described by Peck (1898b), *H. albipes* is a smaller agaric, with pileus 1.2 cm. broad, stipe 2.5–3.5 cm. × 3–5 mm. The gills are narrow, not broad as in *H. basidiosus*. Smith and Hesler found that the type specimens of *H. albipes* possessed a thin gelatinous pellicle. The surface of *H. basidiosus* is merely filamentous. Other features of the two species are nearly identical.

Hygrophorus flavodiscus Frost, in Peck, Ann. Rep't N. Y. State Mus. 35: 134. 1884. Plate 1250.

Pileus 2–6 cm. broad, convex at first with an incurved margin, expanding to broadly convex, finally plane and shallowly depressed, margin with white fibrils of partial veil, not striate, surface glutinous from the universal veil, gluten finally drying in radiating streaks, "orange buff" on the disc, paler toward margin and "pale orange buff" to "cream buff," edge whitish; flesh white, firm, odor and taste not distinctive.

Lamellae adnate to short decurrent at first, becoming moderately or long decurrent, subdistant to distant, moderately broad (2–6 mm.), occasionally forked and anastomosing, usually intervenose and the sides

PLATE 1350. *Hygrophorus fatoodiacus*; × 1.

of the lamellae venose, a distinct pinkish flush present at first ("pale pinkish cinnamon") fading to whitish, edges even and straight.

Stipe 3–7.5 cm. long, 6–14 mm. thick at the apex, equal or tapering downward, solid (whitish and firm inside), eccentric at times, sheathed nearly to apex with glutinous universal veil and ending in an obscure annulus, whitish with pale orange-yellow tint, fibrillose to somewhat scabrous above the gluten, innately fibrillose beneath the gluten.

Spores 6–8 × 3–4 (–4.5) μ, elliptical to elliptic-oblong, smooth, hyaline in KOH, not amyloid; basidia 32–52 × 6–8 μ, four-spored; cystidia not differentiated; pileus tissue: pellicle gelatinous, thick, yellow in KOH, pigment intercellular and intracellular, hyphae cylindrical, 2–4 μ in diameter, trama hyaline, hyphae cylindrical to inflated, 5.5–18.5 μ in diameter, clamp connections present throughout; gill trama divergent, hyaline, hyphae cylindrical to slightly inflated, 2.5–8 (–13) μ in diameter.

Gregarious to cespitose under white pine. Leverett. November. *Bigelow 7957, 7958, 7974.*

The study of abundant material of this species both in the fresh and dried conditions confirms the observations of Smith and Hesler (1939), which were based upon a study of the type. I have also had the opportunity to examine Peck's type at Albany.

Smith and Hesler also indicate that *H. flavodiscus* should be compared with *H. melizeus* Fr. I have not had the opportunity to examine authentic material of *H. melizeus.* However, *H. flavodiscus* does not become pallid ochraceous throughout as Fries (1836-1838) emphasizes for *H. melizeus.* Only the pileus of *H. flavodiscus* becomes ochraceous in drying. The lamellae fade from pinkish to white, and remain so in drying. The stipe is tinted with pale orangish-yellow when fresh. At times this color remains when the specimens are dried, but often the stipe fades to whitish like the lamellae. Kühner and Romagnesi (1953) describe *H. melizeus* from unpublished notes of J. Favre. They state that this agaric has a pileus which is pale alutaceous, beige or beige-chamois, recalling a small Hebeloma; gills and stipe tinted with the same colors; stipe dry; flesh becoming sordid brown in KOH. These characters do not apply to *H. flavodiscus.* Kühner and Romagnesi suggest that *H. chrysaspis* Métrod is close to *H. flavodiscus.* The two species are perhaps related, but certainly not identical. *H. flavodiscus* does not become reddish-brown as the other. Habitat and the spore width do not agree either.

H. flavodiscus seems most closely related to *H. gliocyclus* Fr. for both species show indications of a partial veil. I believe the two can be separated most easily on characters of the gills and spores. *H. gliocyclus* has yellowish, narrow gills and spores 7–9 (–11) × 5–6 μ, as described by Smith and Hesler (1939).

Gasteromycetes

Pisolithus tinctorum (Pers.) Coker & Couch, Gasteromycetes of the eastern United States and Canada, p. 170. 1928.

Three fruiting bodies (*Bigelow 7774*) were found near one another on an old sawdust pile at Mt. Toby, the University reservation in Leverett and Sunderland.

This unusual fungus is fairly common in the Pacific northwest and in the southeastern United States, but is apparently rare in the northeast. Specimens found on Cape Cod are deposited at the Farlow Herbarium, but there are no previous records of this fungus occurring in western Massachusetts.

Pseudocolus schellenbergiae (Sumstine) Johnson, Bull. Ohio Biol. Survey 4: 338. 1929.

On two occasions single fruiting bodies were discovered on the same site near the University campus. These were growing in mixed woods on wet soil and humus. *Bigelow 6950* was collected July 19; *Bigelow 7723* on September 11. The field characteristics and microscopic features are typical of the species.

As far as I can determine, the Amherst collections represent the most northern occurrence of the species reported thus far. According to Snell and Dick (1956), Mrs. Sybil Curtis found *P. schellenbergiae* near Worcester.

This fungus is well discussed in the literature, and has been reported previously from Pennsylvania, New York, New Jersey, and Rhode Island. Some investigators believe *P. schellenbergiae* to be identical with *P. javanicus* (Penzig) Lloyd. If this is true, the latter name has priority. — DEPT. OF BOTANY, UNIV. OF MASSACHUSETTS, AMHERST.

Literature Cited

Fries, E. M. 1836–1838. Epicrisis Systematis Mycologici, seu Synopsis Hymenomycetum. pp. 610. Upsaliae.

HESLER, L. R. 1937. Notes on southern Appalachian fungi, II. Jour. Tenn. Acad. Sci. 12: 239–254.

KÜHNER, R. and H. ROMAGNESI. 1953. Flore Analytique des Champignons Supérieurs. pp. 557. Paris, France.

PECK, C. H. 1887. Contributions to the botany of the State of New York. N. Y. State Mus. Bull. 1 (2) : 5–66.

. . . . . 1898a. Report of the State Botanist. N. Y. State Mus. Rep't, 51:267–321. Pl. A, B.

. . . . . 1898b. New species of fungi. Torrey Bot. Club Bull. 25: 321–328.

RIDGWAY, R. 1912. Color standards and color nomenclature. Washington, D. C.

SMITH, A. H. 1944. Unusual North American Agarics. Amer. Midl. Nat. 32: 669–698.

SMITH, A. H. and L. R. HESLER. 1939. Studies in North American species of Hygrophorus, I. Lloydia 2: 1–62.

. . . . . .1942. Studies in North American species of Hygrophorus II. Lloydia 5: 1–94.

SNELL, W. H. and E. A. DICK. 1956. An unusual phalloid from Massachusetts. Mycologia 48:327.

SEPAROTHECA, A NEW GENUS (COMMELINACEAE) FROM MEXICO

U. T. WATERFALL

While collecting in Mexico in August 1956, the author found in pine woods in the Sierra Madre southwest of El Salto, Durango, a dwarf member of the Commelinaceae only 3-7 cm. high, growing from small, succulent, elongate, tuber-like roots. It has few flowers, with the inflorescence subtended and enfolded by opposite, or subopposite, ovate-falcate to ovate-attenuate foliaceous bracts which are longer than the few cauline leaves.

Examination showed it to have separate sepals which are nearly hyaline, with a few long hairs at their apices and along the outside of the upper parts of their midribs. The corolla is sympetalous with a tube 6-8 mm. long, and lobes 5-8 mm. long, ovate to ovate-lanceolate. The 6 stamens are fertile, with filaments 1–3 mm. long, filiform to flattened, sometimes somewhat spiralled or twisted, inserted on the lower part of the corolla

lobes. The connectives are 1-6 mm. long, flattened, wider than the filaments, sometimes longer.

In Woodson's key to the genera of the Commelinaceae (1942) the combination of sympetalous corollas, leafy-bracted cymes and separate sepals could indicate only *Setcreasea*. However, it could not be any of the species of that genus as treated by E. Matuda (1955). It seemed possible that it might be an anomalous new species of that genus, but, in a family in which generic circumscriptions have been drawn as diversely as in the Commelinaceae, it was thought advisable to check related genera before describing a new species. In so doing, reference was found to *Zebrina* (?) *pumila* described by Greene (1888) from the Sierra Madre west of the city of Durango. This description fits fairly well the species under consideration. An examination of the type, *A. Forrer, s. n.*, from the Sierra Madre west of Durango, altitude 8100 ft., Sept. and Oct. 1881 (ND), shows that it is the same taxon as the one under consideration.

The genus *Treleasea* was erected by Rose (1899) to include three species, previously referred to *Tradescantia*, which have "petals tapering into a claw, forming a tube . . . ", epipetalous stamens and stipitate fruits (actually they seem to be pedicellate, not stipitate). He believed its affinities to be "perhaps nearest Zebrina . . . "

Greene (1888) in describing *Zebrina pumila* stated, "This curious little plant must surely be a congener of . . . *Tradescantia leiandra*, Torr., which Mr. C. B. Clarke (DC. Monogr. III:318) has referred, with a doubt, to the Central American genus, *Zebrina*." Following the erection of *Treleasea* by Rose, Greene (1900) transferred *Zebrina pumila to Treleasea*, stating "This plant, which I, twelve years since, was strongly inclined to make the type of a new genus, certainly falls into Mr. Rose's genus *Treleasea* newly established. It may even be identical with one or the other of the two species recognized by Mr. Rose. But my specimen is not now to be found, unless at the University of California."

Rose later (1903) substituted the name *Neotreleasea*, stating that *Treleasea* had already been used by Spegazzini for another

genus. He included the same species as he had done previously. Then he appended a note concerning *Treleasea pumila* (Greene) Greene (*Zebrina pumila Greene*). He excluded it from his genus *Neotreleasea*, stating that he had seen the type and that " . . . its relationships are more nearly with true *Zebrina*. The two have in common a terminal cluster of flowers subtended by a two-leaved spathe, a narrow tubular corolla, and widely separated anther-cells, etc."

Thus we find Greene transferring his species to Rose's genus, and Rose subsequently excluding it. Woodson places *Neotreleasea* in *Setcreasea* while Matuda (1955) does not mention this species in his treatment of *Setcreasea*, but he does exclude it from *Zebrina*. From Matuda's treatment it would seem that he does not know the species through actual study, but only through reference to the literature. It seems probable that it has not been recollected until found by the author in 1956. No material has been found at the Gray Herbarium, the U. S. National Herbarium or the Chicago Natural History Museum according to their respective curators to whom the author is grateful for aid.

This taxon has separate sepals as does *Setcreasea*, but has a long, strongly-united corolla tube and long connectives similar to *Zebrina*, and glabrous filaments, sometimes shorter than the connectives, which is characteristic of neither.

Four possibilities seem to occur for the disposition of this species: (1) to place it in *Setcreasea* (*sen. lat.*) as a distinct species; (2) to place it in *Zebrina* as a distinct species; (3) to consider it a connecting link between the two genera and unite them; and (4) to create for it a new genus. The author has concluded that the latter alternative seems to be a logical one.

Separotheca, gen. nov. Commelinacearum. Herbae erectae; caulibus annuis ex radicibus succulentis perennibus; foliis ovato-attenuatis vel linearibus; sepalis 3, distinctis, hyalinis vel subhyalinis; corollae tubo et lobis aequalibus vel subaequalibus; staminibus 6, ad basim corollae lobis affixis; filamentis glabris; connectivis quam filamentis latioribus, nunc brevioribus, nunc longioribus; fructibus siccis, stylis filiformibus, stigmatibus capitatis; seminibus 5, angulatis.

Separotheca pumila (Greene) Waterfall, comb. nov. based on **Zebrina**

(?) **pumila** Greene, Pittonia 1: 157–158. 1888: **Treleasea pumila** (Greene) Greene, Pittonia 4: 225. 1900.

Stems short, 3–7 cm. tall, annual from elongate tuberous roots; stems and leaves glabrous; stem simple, or branching from the first or second node; first leaf 8–15 mm. long, ovate to ovate-lanceolate; second leaf 2–4 cm. long, ovate-caudate to linear-lanceolate; sometimes a longer third leaf present; bracteal leaves 1.5–5 cm. long, usually longer than the leaf below it, ovate-attenuate to ovate-caudate; flowers few; sepals distinct, subhyaline to hyaline, especially on their margins, pilose along midribs and at apices; corolla pink, 11–15 mm. long, basal half united into a tube, lobes ovate to ovate-lanceolate; stamens 6, fertile; filaments 1–3 mm. long, filiform to flattened, inserted on lower part of corolla lobes; connective 1–6 mm. long, flattened, wider than the filaments, inverted V-shaped, sometimes longer than the filaments; styles filiform; stigmas capitate; fruit a capsule; seeds 5, ca. 2 mm. long and 1.5 mm. wide, more or less angulate, dark brown.

In addition to the type, the following collections have been seen, all from the Sierra Madre; **Waterfall 12673**, shallow soil on rock strata in pine forest, 5 miles west of El Salto, Durango, Aug. 11, 1956; **Waterfall 12704**, open pine woods, wet flats, 24 miles west of El Salto, Durango, Aug. 12, 1956. — DEPARTMENT OF BOTANY AND PLANT PATHOLOGY AND THE RESEARCH FOUNDATION, OKLAHOMA STATE UNIVERSITY, STILLWATER, OKLAHOMA.

Literature Cited

Greene, E. L. 1888. New Species from Mexico. Pittonia 1: 157–158.

———. 1900. Corrections in Nomenclature. Pittonia 4: 225.

Matuda, Eizi. 1955. Las Commelináceas Mexicanas. An. Inst. Biol. Univ. Mex. 26 (2) : 303–432.

Rose, J. N. 1899. Treleasea, a New Genus of Commelinaceae. Contr. U. S. Natl. Herb. 5 (4) : 207–208.

———. 1903. Neotreleasea. Contr. U. S. Natl. Herb. 8: 5–8.

Woodson, Robert E., Jr. 1942. Commentary on the North American Genera of the Commelinaceae. Ann. Mo. Bot. Gard. 29: 141–154.

NATURAL HYBRIDIZATION OF HELIANTHUS LONGIFOLIUS WITH H. ATRORUBENS AND H. OCCIDENTALIS[1]

DALE M. SMITH AND WILLIAM C. MARTIN

Several studies of natural hybridization between species of *Helianthus* have been made in recent years. Many natural hybrids have been reported and most of them have been substantiated by controlled crossing. In general, whenever two diploid species grow in close proximity under disturbed conditions, local hybrid swarms result. The gene flow may be restricted as in the case of *Helianthus divaricatus* × *H. microcephalus* (Smith and Guard, 1958), or extensive introgression may occur as in *H. annus* × *H. bolanderi* (Heiser, 1949). Regardless of the extent of hybridization, all of the previously described examples have dealt with pairs of species.

In September of 1957, a mixed population consisting of four species of *Helianthus* was found one mile northeast of Albertville, Alabama. These species were *H. microcephalus, H. longifolius, H. occidentalis,* and *H. atrorubens.* Putative hybrids of *H. longifolius* × *H. atrorubens,* and *H. longifolius* × *H. occidentalis* were discovered, but *H. microcephalus* apparently had not hybridized with the other species. The area in which the mixed population was found was a relatively new highway embankment bordering a small scrub-oak woodlot. The four species were more or less aggregated at specific places within the area, and hybrids were found only at the zones where two species overlapped. At the west end of the population there were a few scattered individuals of *H. occidentalis,* and approximately 200 yards distant at the east end of the area was a large population of *H. atrorubens* with scattered individuals of *H. longifolius* between these first two species. *Helianthus microcephalus* was found at the edge of the oak woodlot adjacent to the plants of *H. atrorubens* and *H. longifolius.* While mixed populations of *H. atrorubens* and *H. microcephalus* are quite commonly en-

[1] Supported by the University of Kentucky Faculty Research Fund and *NSF* grant #G-1836. The authors express their appreciation to Dr. C. B. Heiser, Department of Botany, Indiana University, for valuable suggestions following a critical appraisal of the manuscript.

countered in many places, the other two species are rarely ever seen in the southeast much less being found in mixed populations. *Helianthus occidentalis* is a common plant of the prairies and sand hills of the midwest from Michigan to Texas, and is occasionally encountered in the southeast. *Helianthus longifolius* is one of the rarest species of *Helianthus,* and its range covers only a small area in the northern parts of Alabama and Georgia, where it typically grows on or near rock outcroppings. *Helianthus atrorubens* and *H. microcephalus* are widely distributed throughout the southeast in a variety of habitats. The reasons for this unusual occurrence of four species in such a limited area are somewhat obscure at the moment, but it seems possible that the plants could have been introduced into the area along with fill material which was used in constructing the embankment, since the plants are perennials and their underground parts could be transported along with soil very easily.

Procedures

Herbarium specimens and living plants, as well as flower buds for cytological examination were taken from the population. Selected individuals and a random mass collection were pressed for later study. Whole plants were pressed, since the basal material as well as the upper parts of the plants possessed important morphological features for comparison. Herbarium specimens have been deposited at Indiana University and the University of Kentucky. The cytological material was fixed in a mixture of 3 parts ethyl alcohol to 1 part acetic acid for 24 hours, and transferred to 70% ethyl alcohol for storage. Anthers of the appropriate age were squashed in acetocarmine for study.

Morphology

The species occurring in this population are quite distinct and are not easily confused, although *H. atrorubens, H. occidentalis,* and *H. longifolius* all have the upper cauline leaves reduced, giving the plants a decidedly scapose aspect. The leaves of *H. microcephalus* are essentially similar along the length of the stem except in the inflorescence where they are reduced. The leaves and stems of *H. longifolius* are completely glabrous, so

that it too is quite distinct. Actually, only *Helianthus occidentalis* and *H. atrorubens* present a somewhat similar aspect, but the purple disk corollas and obtuse phyllaries of *H. atrorubens* serve to distinguish it quite adequately. The outstanding morphological features of the four species are presented in Table 1. The morphology of the putative hybrids will be considered individually.

HELIANTHUS LONGIFOLIUS × H. OCCIDENTALIS

One putative hybrid of this combination was discovered and appeared to be essentially intermediate between the two parents. Especially evident were the modifications of leaf shape and pubescence, the hybrid having narrowly lanceolate leaves which were setaceous on the margin.

HELIANTHUS LONGIFOLIUS × H. ATRORUBENS

The many usually well defined differences between these two species are, in this population, bridged by hybrid individuals. Considerable variation was encountered in leaf width, phyllary shape, head diameter, disk color and leaf pubescence, which were analyzed in this study, and are summarized in Table 2. The lower stature and more prominent basal rosettes of *H. longifolius* are usually sufficient to separate it from *H. atrorubens* but were not used here because of the great environmental modification of these two characteristics in this population.

LEAF SHAPE. The basal leaves in *H. longifolius* are generally numerous, elongate and linear or narrowly obovate, rarely exceeding one centimeter in width. In *H. atrorubens,* the leaves show considerable variability in shape, but are always many times broader than one centimeter. In this population the hybrids bridge the gap between these two extremes.

LEAF PUBESCENCE. Trichomes are completely lacking in *H. longifolius* except for a few at the tips of the receptacular bracts. In contrast to this, *H. atrorubens* is usually rather harshly pubescent over most of the plant. The leaves of the putative hybrids are characterized by the presence of a few scattered trichomes.

PHYLLARY SHAPE. One of the most outstanding features of *H. atrorubens* is the presence of broad, obtuse phyllaries. Those of

TABLE I

Comparison of Morphological Features of *Helianthus atrorubens, H. occidentalis, H. longifolius, and H. microcephalus*

	H. atrorubens	*H. occidentalis*	*H. longifolius*	*H. microcephalus*
STEM PUBESCENCE	Spreading-hirsute	Strigose	Glabrous	Glabrous
LEAF				
Arrangement	Largely basal	Largely basal	Largely basal	Distributed along stem
Shape	Broadly ovate, narrowed to broadly winged petiole	Ovate, narrowed to slightly winged petiole	Linear to linear-lanceolate, gradually tapering to base	Ovate-lanceolate with attenuate tip, petiole distinct
Pubescence	Scabrous to hirsute	Scabrous to strigose	Glabrous	Scabrous above, tomentulose beneath
Width	3.5-5.5 cm.	2.5-4.0 cm.	0.9-1.5 cm.	2.5-5.0 cm.
PHYLLARY SHAPE	Short, broad, tips obtuse	Narrowly attenuate	Narrowly attenuate or acuminate	Narrowly attenuate or acuminate
DISK				
Diameter	1.2-1.5 cm.	0.8-1.3 cm.	0.9-1.3 cm.	0.5-1.0 cm.
Corolla color	Lobes purple	Lobes yellow	Lobes yellow	Lobes yellow

H. longifolius are linear attenuate while the hybrids' are merely acute.

DISK DIAMETER. The differences here are not pronounced but, in general, the disks of *H. longifolius* are about 1.0 centimeter in diameter whereas those of *H. atrorubens* range up to 1.5 centimeters.

DISK COLOR. A clear cut difference exists here in that *H. longifolius* has disk corollas which are yellow throughout, while *H. atrorubens* has purple-tipped corollas. In the field the putative hybrids appear to have yellow corollas but an examination under the microscope reveals that the hybrids have purple pigmentation on their tips. The pictorialized scatter diagram in figure 1 points out the discordant pattern of variation encountered in the population.

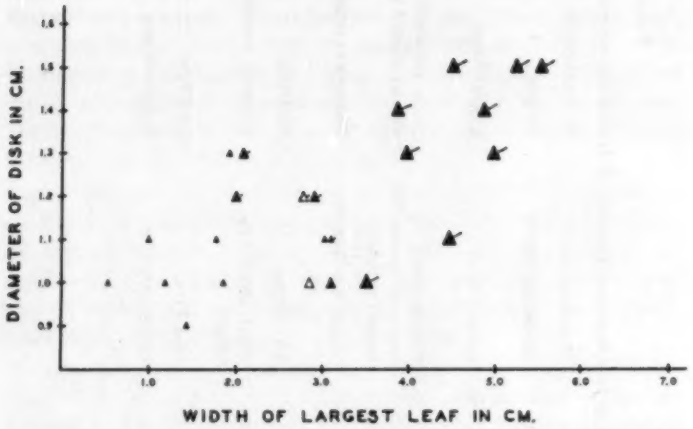

FIGURE 1. Pictorialized scatter diagram of a population sample including *Helianthus longifolius, H. atrorubens,* and putative hybrids. The smallest triangles = attenuate phyllaries, largest triangles obtuse phyllaries, intermediate triangles = acute phyllaries. Open triangles = yellow disk corollas, solid triangles = purple-tipped disk corollas. Triangles without a diagonal line on right side = glabrous leaves, with a long line = scabrous or hirsute leaves, with a short line = remotely setaceous leaves.

Cytology

The chromosome numbers of the species, with the exception of *H. longifolius*, which is reported here for the first time as N=17, have been presented by Heiser and Smith (1955), and are diploid (N=17). Meiosis in the parental species has been reported as normal in all except *H. atrorubens*, in which Jackson and Guard (1957) have reported numerous abnormalities. Plants of *H. atrorubens* which have been grown in the experimental garden have occasionally failed to produce pollen or viable seed, which may be an expression of an abnormal chromosomal condition. This is further suggested by the occurrence of low pollen fertilities in plants from the Alabama population which appear to be "good" *H. atrorubens*.

Table II

Comparison of Morphological Features of *Helianthus atrorubens*, *H. longifolius*, and their Putative Hybrid

	H. atrorubens	Intermediates	*H. longifolius*
LEAF			
Pubescence	Scabrous or hirsute	Remotely setaceous	Glabrous
Width	3.5-5.5 cm.	1.6-3.4 cm.	0.9-1.5 cm.
PHYLLARY SHAPE	Short, broad, tips obtuse	Short, broad, tips acute	Narrowly attenuate or acuminate
DISK			
Diameter	1.2-1.5 cm.	1.1-1.3 cm.	0.9-1.3 cm.
Corolla color	Lobes purple	Tips of lobes purple	Lobes yellow

However, in all the plants from this population which have been examined cytologically, parental species and putative hybrids, meiosis was essentially normal. Buds of several putative hybrids were examined, and of 65 microsporocytes examined, 63 showed perfect pairing and only 2 showed abnormal associations in the form of a single chain of 4 chromosomes.

Discussion

This report of natural hybridization in *Helianthus* is especially interesting in that four potentially hybridizing species are represented in a mixed population. Even though the evidence suggests that only three of the four species have actually hybridized, the

stage is nevertheless set for the formation of bizarre types of individuals incorporating genetic material from all four species. That such a phenomenon is theoretically possible, has been verified by three and four species hybrids which have been produced experimentally (Smith, unpublished). The actual discovery of hybrids of this type in nature would have special significance relative to the problems concerning the origin of polyploid species of *Helianthus*. There are several polyploids which show no close resemblance to extant diploid species or to the F_1 diploid interspecific hybrids which have thus far been produced. Consequently, it is suggested here that certain polyploid species may have originated from hybrids involving more than two species.

The relatively high fertility and the high degree of chromosome homology of the hybrids of *H. atrorubens* × *H. longifolius* serves to point up the lack of great barriers to crossing between the diploid perennial species of *Helianthus*, even in the presence of a high degree of morphological distinction. Furthermore, the very narrow distribution of *H. longifolius* contrasts sharply with the extensive range of *H. atrorubens*, and ecological differences probably also exist, so that the two species are not found in mixed populations unless they are brought together by disturbing influences. It would appear that genetic barriers have been of minor importance in speciation in this group; therefore, with a complete breakdown of the external barriers separating these species, it is conceivable that an amalgamation of them could occur. As yet, there is little evidence that this is happening even in such a disturbed area as that described here.

Summary

A mixed population of diploid (N=17) perennial sunflowers composed of *Helianthus atrorubens, H. occidentalis, H. longifolius* and *H. microcephalus* was found in September, 1957, near Albertville, Alabama. One putative hybrid between *H. occidentalis* and *H. longifolius* was found, and no hybrids involving *H. microcephalus* were evident but a large hybrid swarm of *H. atrorubens* × *H. longifolius* was present. These plants were quite variable, with leaf and phyllary characteristics showing

outstanding variation. Very little meiotic abnormality was encountered in the population, although the occurrence of low pollen fertilities in some of the plants suggests that cryptic structural differences in the chromosomes exist. Speciation has apparently proceeded without the development of the sterility barrier, but the external barriers which ordinarily separate them have in this instance been partially broken down by the influence of man. However, even under these conditions there is little indication of the amalgamation of the species in this population.

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LITERATURE CITED

HEISER, C. B., JR. 1949. Study in the Evolution of the Sunflower Species *Helianthus annuus* and *H. Bolanderi*. Univ. Calif. Pub. Bot. **23**: 157–208.

HEISER, C. B. JR. AND D. M. SMITH. 1955. New Chromosome Numbers in Helianthus and Related Genera (Compositae). Proc. Indiana Acad. Sci. **64**: 250–253.

JACKSON, R. C. AND A. T. GUARD. 1957. Analysis of some Natural and Artificial Hybrids in Helianthus. Proc. Indiana Acad. Sci., **66**: 306–317.

SMITH, D. M. AND A. T. GUARD. 1958. Hybridization between *Helianthus divaricatus* and *H. microcephalus*. Brittonia, **10**: 137–145.

WALLPAPER CLEANER IN THE HERBARIUM. — In a well-kept herbarium, specimen sheets are handled in such a manner that they do not become excessively dirty. However, where collections have been neglected for long periods or are housed in poor cases they may become badly soiled by dust and smoke. This was the case with a rather large number of sheets in the Herbarium of Yale University, most of which had come as gifts and were dirty when received. Specimens of little value may be discarded but valuable collections should, of course, be preserved even though soiled. If the plant is not glued too tightly it may sometimes be removed and mounted on a clean sheet. However, where this is impossible without severe breakage some other method must be sought.

Since most of the soiled areas are usually near the margin of the sheet, it might be feasible to remove it with an art gum eraser. Actually, this tends to smudge and leaves the paper streaked rather than clean.

The idea of using wallpaper cleaner of the pliable putty type occurred to me, and this was tried with very good results. This material can be purchased from most paint or hardware stores and comes in vacuum sealed tins. Several different brands have been used and all proved to be equally satisfactory. When the can is opened, the unused cleaner may be stored in screw-top glass jars to prevent it from drying out. For cleaning a specimen, we use a small portion (about the size of a golf ball) and this is also stored in a screw-top jar. In use, the cleaner must be kneaded thoroughly to keep it pliable and to work the dirt in. It gives satisfactory results until the ball is quite black, when it is discarded for a fresh piece. If there is dust close to the specimen, the cleaner may be rolled into a small cylinder and used like a pencil. Care must be exercised, however, since hairs, flower parts, etc., will adhere to the cleaner and thus be removed.

This method has been used in the Yale Herbarium for the past six months with excellent results. The idea is offered here in the hope that it may be found equally useful by others who have similar problems. — JOHN EBINGER, OSBORN BOTANICAL LABORATORY, YALE UNIVERSITY.

RHODODENDRON MAXIMUM IN NEW HAMPSHIRE.[1] — The valuable paper by the late C. H. Knowlton (5) on *Rhododendron maximum in New England* unfortunately contains some errors and omissions for New Hampshire. Recently Iltis (4) has quite understandably accepted Knowlton's data and has included his stations on a map covering the range of the species.

In the past few years we have tried to visit all recorded New Hampshire colonies of *R. maximum* and thus have become aware of the faults in recent publications. But before reporting on these, we have wanted to check all possible clues to new stations.

[1] Published with the approval of the Director of the New Hampshire Agriculture Experiment Station as Scientific Contribution No. 232.

Our first comment relates to the colony, chiefly in the township of Pittsfield, which was first reported by R. J. Eaton (2). It was assumed both by Eaton, and until recently, by the senior author of this paper, that a small part of the stand was in Strafford County in the township of Strafford, the remainder or larger part being in Pittsfield. Knowlton, loc. cit. counted this colony as two separate stations presumably because it was reported from two townships and Iltis has perpetuated the error by showing two dots on his map in the vicinity of Pittsfield, New Hampshire. The senior author has visited this area at least a half-dozen times in the years since June 29, 1931 when he was first shown the plants by Robert Varney of Barrington, New Hampshire. These visits, including our most recent one on July 7, 1954, have shown no significant expansion or contraction of the colony in 23 years. In 1954 we made a very careful comparison of map-details with the local topography. It is evident that the plants are not in Strafford County at all and that the nearest plant is somewhat more than 100 feet from the line as shown on the Alton Quadrangle. But it is interesting to note that the colony does extend westward along the hemlock-shaded shore of Adams Pond into the township of Barnstead in Belknap County. Near Adams Pond 3 townships and 3 counties converge and this single small colony of *Rhododendron*, covering possibly half an acre, almost stretches into all of them.

Recent authors have lost sight of the Manchester Rhododendrons though at certain times during the past 60 years they may have been more numerous there than in any other part of New Hampshire. W. E. Moore (6) reported the presence of a tremendous area of Rhododendrons about 2 miles northwest of Amoskeag Falls. Then on December 11, in the same year (1897) F. W. Batchelder wrote an article for the "Manchester Union" entitled "A Day In My Arboretum" in which he commented on the occurrence in Manchester of *Rhododendron*, White Cedar and other interesting species of woody plants. Two years later Batchelder (1), this time, for a more critical audience, discussed the local Rhododendrons. Thus, there is good evidence, in the literature, that our plant occurred in Manchester in some abun-

dance at the turn of the century. More recently the late Reverend Hubert Sheehan, OSB of St. Anselm's College collected material from Black Brook Cedar Bog in Manchester and before this in 1935, Dr. Maurice Provost of Vero Beach, Florida, then a student at St. Anselm's College, discovered another stand from which he collected specimens. The authors of this paper singly or together have now visited both of these stations and in addition have found *Rhododendron* in one other locality within the confines of Manchester. At least 2 of these 3 colonies probably have been separate for a long time. The other 2 occur in distant parts of the same swamp and quite possibly were joined 60 years ago.

With one exception (the Albany station on Mt. Chocorua) we have succeeded in relocating all of the New Hampshire stations listed by Knowlton loc. cit. The evidence is reasonably good in this instance that there was a colony on Mt. Chocorua (3) but from the drastic changes that we have noted taking place in other stands as a result of lumbering operations, swamp-flooding, browsing by deer, etc., it is quite likely that the Rhododendrons there may have been completely destroyed or reduced to a few inconspicuous individuals.

Specimens from all stations visited by the authors have been collected and are to be found either in the Herbarium of the University of New Hampshire or that of the New England Botanical Club. — A. R. HODGDON AND R. PIKE, DEPARTMENT OF BOTANY AND DEPARTMENT OF HORTICULTURE, RESPECTIVELY, UNIVERSITY OF NEW HAMPSHIRE, DURHAM.

CLAUDE FAVARGER. Flore et vegetation des Alps. I. Etage alpin. II. Etage subalpin. 271 & 274 pp., with 32 + 32 planches and 35 + 41 drawings by Paul A. Robert. Delachaux & Niestle S.A., Neuchatel & Paris 1957 & 1958. Price Swiss Fr. 30.00.

FLORA AND VEGETATION OF THE ALPS.[1] — The Alps are among the regions most botanists and all those interested in the vegetation of mountains and northlands want to visit and study, although only a few of those living in distant countries ever get an opportunity to climb the lofty peaks and enjoy the multitude of flowers. The majority has to be content with descriptions by others and they also must study the

[1] CLAUDE FAVARGER. Flore et vegetation des Alps. I. Étage alpin. II.Étage subalpin. 271 & 274 pp., with 32 + 32 planches and 35 + 41 drawings by Paul A. Robert. Delachaux & Niestlé S.A., Neuchâtel & Paris 1957 & 1958. Price Swiss Fr. 30.00.

flora by aid of manuals, pictures, and herbarium material only, adding life just through imagination. This is sometimes a little difficult, especially because of the fact that descriptive books by botanists tend to be as dry as are their herbarium plants. Botanists with the ability to write literary works, leaving their interest in details for a more general and descriptive treatise, are as rare in the Alps as they are elsewhere on the globe.

Recently, one of the best botanists of Switzerland, a man with a wide reputation in modern and classical approaches, has given others of his time and knowledge by writing two delightful volumes on the flora and vegetation of the Alps. This reviewer knows few books which unite botanical correctness with literary language to such a high degree. The many nice pictures, in black and white and color, make it easy for the reader to follow the author, Professor Claude Favarger of the University of Neuchâtel, into the field and study with him the variable flora of these best known and most attractive mountains of Europe.

Although both the volumes are intended for the interested layman rather than for the specialist, there is hardly another treatment available which at the same time gives a more scientific approach to the subject. In the first volume, the alpine milieu is described in detail and the terminology explained, at the same time as the reader is informed about the climate and different kinds of soil to be expected. The typical characteristics and biology of alpine plants in general are masterly reviewed before the Alpine flora and the origin of its elements are discussed in another chapter. Thereafter, the fundamentals of the phytosociological approach to studies on vegetation are given, followed by a description of the particular communities of Alpine plants connected with different kinds of high-alpine conditions, from the rocks to the meadows and mires. The descriptions of these associations are based on their quantitative and qualitative floristic composition, and numerous colored pictures and pen-drawings in the text explain the main features of each community. The last part of the first volume reviews the principal families of Alpine plants, with representative examples.

In the second volume, which is devoted to the subalpine regions, the characteristics and limits of this less easily defined zone are discussed, and the transition zones are considered in a concise but very clear chapter. The subalpine zone in the strict meaning of the term is then described in the same detail as were the communities of the alpine zone in the first volume, with a strong emphasis on climax associations and on some pioneering and specialized communities typical of the somewhat more favorable regions. A short chapter on the Jura Mountains and the western Alps completes the descriptions of the vegetation, while the floristic review covers many of the most interesting subalpine

species typical of these parts of the Alps. The volume is completed with a chapter on botanizing in the Alps, in which a plea is made for caution lest rare species be eradicated, and on the protection of the nature of the Alps so that future generations also will be able to enjoy the same beauty observed by present visitors. There is a short bibliography and good indices to both volumes at the end of the second volume.

Although the descriptions in these volumes are based on the flora and vegetation of the Alps, they are of great interest also to those who are concerned with the plants of American mountains, notably those in New England. Naturally, the species are rarely the same, and the communities are also very different and never as colorful here as in the Alps, but the general character of the vegetation is rather similar and its history may also be somewhat comparable in these formerly periglacial mountain complexes.

The delightful volumes by Professor Favarger are a great tribute to the many botanists of the region he treats past and present. The literary abilities of the author and his deep knowledge of the flora and vegetation of his Alps greatly enhance the value of the books. The artist, P. A. Robert, is also worthy of praise, and so is the printer and publisher. The books are to be recommended not only to those interested in mountains in general and the Alps in particular, but also to botanists and botanically minded tourists visiting the Alps. A careful study of the volumes before such a visit will greatly increase its value and also open one's eyes to the many features in botany which nowhere are more distinct and better studied than in the Alps in Switzerland. —

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POTENTILLA ANGLICA IN NEW YORK. — For over eight years I have observed in the Bronx and in Brooklyn, New York City, a creeping *Potentilla* that answers to the description of *P. anglica* Laicharding (*P. procumbens* Sibth.). In November, 1956 I observed, but did not collect, the same species in a yard at Great Neck, Nassau County, Long Island. My collections, deposited in the Herbarium of The New York Botanical Garden, are *Monachino s.n.* (6–22–50), formerly the grounds of The New York Botanical Garden, near the Allerton Avenue entrance, June 22, 1950; *s.n.* (10–28–53), (N. Y.), south of the Conservatory, on a lawn near Juniper plantings, at least two major patches, Oct. 28,

1953; *622*, same station, June 30, 1958; also two fragments collected as vouchers and placed in packets are from the Brooklyn Botanic Garden, N. Y. C., on a lawn, June 30, 1956, and June 7, 1958. The species has flowers chiefly 4-petaled and stem leaves predominantly 3-foliolate. It forms a conspicuous, low, dense colony; the repent stems branch and they often root at the nodes; the basal leaves are 5-foliolate, the stem leaves most 3-foliolate. The petioles in the plants examined are up to 3.5 cm. long; the corolla is 10–15 mm. across, the petals are a little longer than the sepals, obovate, slightly emarginate at the apex, bright yellow on the upper side, orange-yellow at the base; the carpels are about 20–25 in number. Many achenes in no. *622* have become enlarged and plump, but are not fully matured. Our plant is the small-flowered form named f. *parviflora* Domin in Wolf's monograph (1908). Clapham et al. (1952) describe the diameter of the flower of *P. anglica* as (10–) 14–18 mm. and the number of carpels as 20–50; they call the plant trailing tormentil. The 4-merous flower (4 petals, 4 sepals, 4 epicalyx segments) easily identifies the species in the standard floras. Rydberg (1908) has it in the small group *Tormentillae*, characterized by the flowers solitary, axillary, on long pedicels, leaflets not tomentose beneath. *P. canadensis* is a neighboring species and from a distance *P. anglica* appears similar, until one approaches and notices that the bright yellow corolla is 4-merous. The colony is conspicuous enough, but "merely a yellow flower on the lawn" does not invite investigation, and it may well pass as any low cinquefoil or even a lady-sorrel or a buttercup.

In Canada the species is known from Labrador, Newfoundland, Cape Breton Island and Nova Scotia, according to Fernald (1950). For the United States it has been reported from only two states. Rydberg (1908) cited it as introduced in California. Dix (1949) was the first to report it from the East. He collected it near Lake Shehawken, Wayne Co., Pa.; he wrote that its identity was confirmed by Fernald, that it was abundant and grew on a somewhat wet rocky slope with the usual pasture grasses and adventives, that it blossomed late in the fall and that the flowers were 10–13 mm. broad. He added that another locality

about a quarter of a mile south was discovered in Sept. 24, 1949. The species was again mentioned for Lake Shehawken, as seen on the Torrey Botanical Club trip to the area, by Louis E. Hand in Bull. Torrey Club (1950) 77: 408.

Gleason (1952) does not cite the eastern Pennsylvania station. He persists in using the binomial *P. procumbens* Sibthorp (published in 1794) instead of the earlier *P. anglica* Laicharding (published in 1790); but I have not looked into the matter of nomenclature. Until recently when Laicharding's earlier, but obscure, binomial was revived, the name *P. procumbens* was in uniform use everywhere. Incidentally, in his key Gleason distinguishes the species by its 4-merous flowers from *P. reptans* L. with flowers "all 5-merous" but the illustration of the latter in the same work shows clearly four petals. Also, for one described as having "leaflets 5 or 7" the figure of *P. reptans* too much suggests some trifoliolate leaves. I could not trace the actual specimens from which the illustrations of *P. reptans* and *P. anglica* were drawn for the New Illustrated Flora, but if they were drawn from the proper species, the widely spreading hairs as shown on stems and pedicels of both must have originated in the artist's unchallenged imagination.

As unquestioned as the identity of the species appears from description, I could not check my specimen of *P. anglica* with authenticated European material, and such a comparison would be desirable. It has already been hinted how the trailing tormentil may be overlooked as a common cinquefoil or some other low-growing yellow-flowered plant. I would predict that interested persons thus alerted will discover *P. anglica* elsewhere, particularly on lawns, and will eventually prove it to be fairly widespread in its eastern range. — JOSEPH MONACHINO, NEW YORK BOTANICAL GARDEN.

LITERATURE CITED

CLAPHAM, A. R., TUTIN, T. G., AND WARBURG, E. F. 1952. Flora of the British Isles, 485, 494.

DIX, W. L. 1949. *Potentilla procumbens* in the United States. Rhodora 51: 390–391.

FERNALD, M. L. 1950. Gray's Manual of Botany, Eighth Edition, 806, 812.

GLEASON, H. A. 1952. The New Britton and Brown Illustrated Flora 2: 292, 294.
RYDBERG, P. A. 1908. Rosaceae. N. Am. Fl. 22: 294, 302.
WOLF, T. 1908. Monographie der Gattung Potentilla. Bibliotheca Bot. 71: 642, 650–654.

HYMENOPAPPUS FILIFOLIUS var. ALPESTRIS (MAGUIRE) SHINNERS, comb. nov.—*H. nudipes* var. *alpestris* Maguire, Amer. Midl. Nat. 37: 144. 1947. *H. filifolius* var. *nudipes* (Maguire) Turner, RHODORA 58: 219. 1956. (Illegitimate combination, based on *Hymenopappus nudipes.)* Dr. Maguire published *H. nudipes* and its var. *alpestris* simultaneously. If these are considered to be a single taxon and treated as a variety, it must bear the earliest available epithet in that rank, which is *alpestris.* Dr. Turner insists (personal communications) that since the Code regulation regarding automatic epithets for varieties including the type of the species is retroactive, an automatic var. *nudipes* was also published simultaneously with var. *alpestris.* His new combination is then to be regarded as based on the automatic but hitherto unlisted var. *nudipes.* This is hardly in keeping with the spirit of the regulation which states that automatic epithets have no author. It is definitely contrary to the intention of Dr. Gleason's original proposal (for different wordings see Brittonia 7: 17, 1949), whose explicit statement that automatic epithets could not be transferred was unaccoutnably omitted from both the Stockholm and Paris versions of the Code. Even if Dr. Turner's contention is accepted, his combination remains illegitimate because he designated *Hymenopappus nudipes* and not var. *nudipes* as basinym. — LLOYD H. SHINNERS, SOUTHERN METHODIST UNIVERSITY, DALLAS, TEXAS.

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